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MONTHLY PROGRESS REPORT
FOR April 1963
CONTRACT NO. DA-029-501-ORD-2631

 **Kaman
Nuclear**
COLORADO SPRINGS, COLORADO
A DIVISION OF KAMAN AIRCRAFT CORPORATION

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DEVELOPMENT AND FABRICATION OF
NON-DESTRUCTIVE SPECIFIC GRAVITY MEASURING
EQUIPMENT EMPLOYING RADIATION TECHNIQUE

MONTHLY PROGRESS REPORT

For April 1963

KAMAN NUCLEAR

A Division of The Kaman Aircraft Corporation

CONTRACT NO. DA-19-029-501-ORD-2631

ORD Project No. TA2-8051

Period: 1 April 1963 to 30 April 1963

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I. SUMMARY

Problems encountered in the manual and automatic "Stop" sequence involving carriage control, calculator control and block control circuits were investigated and corrected. Interaction between calculator control and block control circuits during normal operation was corrected. Operating difficulties in the calculator occurred and were corrected during the month. A detailed check-out of the carriage control system accuracy was in progress at the end of the reporting period.

II. PROGRESS DURING THE PERIOD

Several interactions between calculator, block control and carriage control circuits were noted during the "Start and Stop" sequences.

Initially, if the tape servo was resting in a limit position, system operation would not take place when the sample reached the "in-beam" or initial measurement position. This required rearrangement of the block start, calculator start and servo limit relays.

In normal operation, if the tape servo reached a limit during the calculator operate cycle, both calculator and block control circuits could operate simultaneously. This resulted in spurious signals to the block control steppers which threw the steppers out of synchronism with the physical position of the attenuating blocks. The interlock circuits were therefore revised to lock out the block controls during the calculator cycle.

The calculator became inoperative during the succeeding tests due to failure of the print actuating solenoid. This circuit was then revised to reduce the holding voltage applied to the solenoid and to increase the wattage rating of

the dropping resistors.

The "Stop" sequence interlocks were then revised to prevent a move signal being sent to the carriage control in the "Manual" stop sequence, and to prevent tape servo and blower operation during the stop sequence. Additionally, a sneak circuit was discovered that was able to apply - 150 v.d.c. to the - 120 v.d.c. controlled bus, thus holding in the main power relay in certain circumstances. The block control and calculator control circuits were revised to eliminate this problem.

Tests were proceeding to determine the accuracy of the carriage control circuits at the end of the period. An interaction developed between the translation and rotation coincidence circuits in the "Full Scan" mode of operations. Corrective action was in process at the end of the reporting period.

III. PROGRESS PLANNED DURING THE NEXT PERIOD

The carriage control circuit revision should be completed, and scan movement accuracy checks started. Due to the addition of the length measuring system, accuracy of carriage movement in relation to the sample dimensions is highly important. Following completion of these checks, length measurements checks will be initiated.